

## CLAIMS

1. A method for separating a precursor cell producing a GABAergic neuron alone, which comprises the steps of:
  - 5 (a) preparing a cell population containing a precursor cell of GABAergic neuron;
  - (b) introducing a DNA, in which a cDNA of a reporter protein emitting a signal detectable even in vivo is attached to the downstream of a promoter of GAD67 gene or GAD65 gene that is gene of an inhibitory neurotransmitter GABA synthase,
  - 10 (c) isolating a GABAergic neuron and a precursor cell of GABAergic neuron based on the presence/ absence of the signal emitted by the reporter; and
  - (d) isolating the precursor cell of GABAergic neuron based on the possession of proliferative capability.
- 15 2. A method for separating a precursor cell producing a GABAergic neuron alone, which comprises the steps of:
  - (a) preparing a cell population containing a precursor cell of GABAergic neuron;
  - (b) introducing a DNA, in which a cDNA of a protein imparting a property of drug resistance is attached to the downstream of a promoter of GAD67 gene or GAD65 gene that is gene of an inhibitory neurotransmitter GABA synthase, into each cell in the cell population;
  - (c) isolating a GABAergic neuron and a precursor cell of GABAergic neuron based on the presence/ absence of the drug resistance; and
  - (d) isolating the precursor cell of GABAergic neuron based on the possession of proliferative capability.
- 30 3. A method for separating a precursor cell producing a GABAergic neuron alone, which comprises the steps of:

- (a) preparing a cell population containing a precursor cell of GABAergic neuron;
- (b) introducing a DNA, in which a cDNA of a recombinant enzyme and a cassette DNA are attached to the downstream of a promoter of GAD67 gene or GAD65 gene that is a gene of an inhibitory neurotransmitter GABA synthase, into each cell in the cell population, wherein the cassette DNA expresses a reporter protein emitting a signal detectable even in vivo after being genetically recombined;
- (c) isolating a GABAergic neuron and a precursor cell of GABAergic neuron based on the presence/ absence of the signal emitted by the reporter; and
- 10 (d) isolating the precursor cell of GABAergic neuron based on the possession of proliferative capability.
4. A method for separating a precursor cell producing a GABAergic neuron alone, which comprises the steps of:
- 15 (a) preparing a cell population containing a precursor cell of GABAergic neuron;
- (b) introducing a DNA, in which a cDNA of a recombinant enzyme and a cassette DNA are attached to the downstream of a promoter of GAD67 gene or GAD65 gene that is gene of an inhibitory neurotransmitter GABA synthase, into each cell in the cell population, wherein the cassette DNA expresses a protein imparting a 20 property of drug resistance after being genetically recombined;
- (c) isolating a GABAergic neuron and a precursor cell of GABAergic neuron based on the presence/ absence of the drug resistance; and
- (d) isolating the precursor cell of GABAergic neuron based on the possession 25 of proliferative capability.

5. The method according to any one of claims 1 to 4, wherein in the step (a), the cell population contains a precursor cell of GABAergic neuron induced from an embryo stem cell or a neural stem cell.

6. The method according to any one of claims 1 to 4, wherein in the step (a), the cell population is prepared by dispersing tissues containing a precursor cell of GABAergic neuron of a donor.

5 7. The method according to any one of claims 1 to 4, wherein the method of introducing the DNA in the step (b) includes transformation mediated by a virus.

8. The method according to any one of claims 1 to 4, wherein the method of introducing the DNA in the step (b) includes electroporation.

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9. The method according to any one of claims 1 to 4, wherein the method of introducing the DNA in the step (b) includes transformation mediated by a liposome.

10. The method according to claim 5, wherein the embryo stem cell or the neural 15 stem cell is derived from a mammal.

11. The method according to claim 10, wherein the mammal is human.

12. The method according to claim 6, wherein the donor is a mammal.

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13. The method according to claim 12, wherein the mammal is human.

14. The method according to any one of claims 1 to 4, further comprising a step of transplanting the cell separated in the step (d) into a recipient.

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15. A precursor cell producing a GABAergic neuron alone, which is obtained by the method according to any one of claims 1 to 14.

30 16. A kit containing a reagent and a cell, which is used for obtaining a precursor cell producing a GABAergic neuron alone in a method according to any one of claims

**1 to 14.**